

AMENDMENTS TO THE CLAIMS

1-6. (Cancelled)

7. (Previously presented) A suturing instrument comprising:
a handle;

a shaft extending from the handle, the shaft having a proximal end near the handle and a distal end opposite the proximal end, the distal end of the shaft having an opening and a passageway constructed and arranged to carry a suture wire to the opening and to plastically deform the suture wire as the suture wire moves through the passageway to cause the suture wire to form a wire suture loop as the suture wire is extended from the opening in the distal end of the shaft, the passageway and the opening being arranged so that the suture wire extends substantially in a distal direction upon exiting the opening;

a wire drive adapted to move the suture wire in the passageway; and

a cutter that moves in the instrument to cut the suture wire at a location near the distal end of the shaft to free the wire suture loop from the instrument.

8. (Previously presented) The instrument of claim 7, wherein when the wire drive moves the suture wire through the passageway, a free end of the suture wire exits the opening in the distal end and follows an arcuate path that leads back toward the instrument.

9. (Previously presented) The instrument of claim 7, wherein the wire drive is adapted to move the suture wire with force sufficient to cause a free end of the suture wire to penetrate tissue.

10. (Previously presented) The instrument of claim 7, wherein the cutter is adapted to cut the suture wire so as to form a sharp point on the suture wire.

11. (Previously presented) The instrument of claim 7, wherein the handle has a manually operable actuator adapted to actuate the wire drive.

12. (Previously presented) The instrument of claim 7, wherein the cutter is adapted to cut the suture wire to free a portion of the suture wire from the instrument after a length of suture wire is passed through the opening into tissue.

13. (Previously presented) The instrument of claim 7, adapted to form the wire suture loop at an extreme axial end of the shaft.

14. (Previously presented) The instrument of claim 7, wherein the cutter is adapted to cooperate with a portion of the passageway to cut the suture wire.

15. (Previously presented) The instrument of claim 7, wherein the cutter includes a cutting surface adapted to move axially along shaft to cut the suture wire.

16. (Previously presented) The instrument of claim 7, wherein the wire drive is adapted to move the suture wire in an axial direction within the shaft.

17. (Previously presented) The instrument of claim 7, wherein the passageway includes an "S" shaped portion that is adapted to deform the suture wire moving through the "S" shaped portion.

18. (Previously presented) The instrument of claim 7, wherein the cutter includes a cutting bar adapted to move axially to cut the suture wire.

19. (Previously presented) The instrument of claim 7, further comprising:
a continuous length of suture wire, wherein the instrument is adapted to form a plurality of wire suture loops from the continuous length of suture wire.

20. (Previously presented) The instrument of claim 7, adapted for use in a minimally invasive surgical procedure.

21. (Previously presented) The instrument of claim 7, wherein the cutter forms part of the passageway.

22. (Previously presented) The instrument of claim 7, wherein the distal end of the shaft includes an angled end face.

23. (Previously presented) The instrument of claim 22, arranged to form a wire suture loop in tissue by positioning the angled end face adjacent the tissue and driving the suture wire through the passageway such that a free end of the suture wire penetrates the tissue and follows a loop-like trajectory.

24. (Currently amended) A suturing instrument comprising:
a handle;

a shaft extending from the handle, the shaft having a proximal end near the handle and a distal end opposite the proximal end, the distal end of the shaft having an opening ~~with a lateral radius of curvature~~ and a passageway having a first radius of curvature and a second lateral radius of curvature in a different direction than the first radius of curvature to carry a suture wire to the opening, the passageway, first radius of curvature and second lateral radius of curvature being constructed and arranged so that, when moved in the passageway, the suture wire exits the opening and loops back to the distal end of the shaft along a helical trajectory and without requiring additional contact with the instrument to form an annular fastener;

a wire drive adapted to move the suture wire in the passageway; and

a cutter that moves in the instrument to cut the suture wire at a location near the distal end of the shaft to free the annular fastener from the instrument.

25. (Previously presented) The instrument of claim 24, wherein the passageway and the opening are arranged so that the suture wire extends in a generally distal direction upon exiting the opening.

26. (Previously presented) The instrument of claim 24, wherein when the wire drive moves the suture wire in the passageway, a free end of the suture wire exits the opening in the distal end and follows a path whereby the free end loops back toward the instrument.

27. (Previously presented) The instrument of claim 24, wherein the wire drive is adapted to move the suture wire with force sufficient to cause a free end of the suture wire to penetrate tissue.

28. (Previously presented) The instrument of claim 24, wherein the cutter is adapted to cut the suture wire so as to form a sharp point on the suture wire.

29. (Previously presented) The instrument of claim 24, wherein the handle has a manually operable actuator adapted to actuate the wire drive.

30. (Previously presented) The instrument of claim 24, wherein the cutter is adapted to cut the suture wire to free a length of suture wire from the instrument after the length of suture wire is passed through the opening into tissue.

31. (Previously presented) The instrument of claim 24, adapted to form an approximately circular wire suture loop by suture wire that is driven out of the opening in the distal end.

32. (Previously presented) The instrument of claim 31, adapted to form the wire suture loop at an extreme axial end of the shaft.

33. (Previously presented) The instrument of claim 24, wherein the cutter is adapted to cooperate with a portion of the passageway to cut the suture wire.

34. (Previously presented) The instrument of claim 24, wherein the cutter includes a cutting surface adapted to move axially along the shaft to cut the suture wire.

35. (Previously presented) The instrument of claim 24, wherein the wire drive is adapted to move the suture wire in an axial direction within the shaft.

36. (Previously presented) The instrument of claim 24, wherein the passageway includes an "S" shaped portion that is adapted to deform suture wire moving through the "S" shaped portion.

37. (Previously presented) The instrument of claim 24, wherein the cutter includes a cutting bar adapted to move axially to cut the suture wire.

38. (Previously presented) The instrument of claim 24, further comprising:
a continuous length of suture wire, wherein the instrument is adapted to form a plurality of wire suture loops from the continuous length of suture wire.

39. (Previously presented) The instrument of claim 24, adapted for use in a minimally invasive surgical procedure.

40. (Previously presented) The instrument of claim 24, wherein the cutter forms part of the passageway.

41. (Previously presented) The instrument of claim 24, wherein the distal end of the shaft includes an angled end face.

42. (Previously presented) The instrument of claim 41, arranged to form a wire suture loop in tissue by positioning the angled end face adjacent the tissue and driving the suture wire through the passageway such that a free end of the suture wire penetrates the tissue and follows a loop-like trajectory.

43. (Previously presented) A surgical instrument comprising:
a handle;
a shaft extending from the handle, the shaft having a proximal end near the handle and a distal end opposite the proximal end, the distal end of the shaft having an opening and a passageway adapted to carry a suture wire to the opening, the passageway having an “S” shaped portion arranged so that suture wire moving through the “S” shaped portion and exiting the opening forms a wire suture loop;
a wire drive adapted to move the suture wire in the passageway; and
a cutter that includes a part of the “S” shaped portion of the passageway and that moves in the instrument to cut the suture wire at a location near the distal end of the shaft to free the wire suture loop from the instrument.

44. (Previously presented) The instrument of claim 43, wherein the passageway and the opening are arranged so that the suture wire extends in a generally distal direction upon exiting the opening.

45. (Previously presented) The instrument of claim 43, wherein when the wire drive moves the suture wire in the passageway, a free end of the suture wire exits the opening in the distal end and follows a curved path so that the free end moves back toward the instrument.

46. (Previously presented) The instrument of claim 43, wherein the wire drive is adapted to move the suture wire with force sufficient to cause a free end of the suture wire to penetrate tissue.

47. (Previously presented) The instrument of claim 43, wherein the cutter is adapted to cut the suture wire so as to form a sharp point on the suture wire.

48. (Previously presented) The instrument of claim 43, wherein the handle has a manually operable actuator adapted to actuate the wire drive.

49. (Previously presented) The instrument of claim 43, wherein the cutter is adapted to cut the suture wire to free a length of the suture wire from the instrument after the length of suture wire is passed through the opening and into tissue.

50. (Previously presented) The instrument of claim 43, adapted to form an approximately circular wire suture loop by suture wire that is driven out of the opening in the distal end.

51. (Previously presented) The instrument of claim 50, adapted to form the wire suture loop at an extreme axial end of the shaft.

52. (Previously presented) The instrument of claim 43, wherein the cutter is adapted to cooperate with a portion of the “S” shaped portion of the passageway to cut the suture wire.

53. (Previously presented) The instrument of claim 43, wherein the cutter includes a cutting surface adapted to move axially along shaft to cut the suture wire.

54. (Previously presented) The instrument of claim 43, wherein the wire drive is adapted to move the suture wire in an axial direction within the shaft.

55. (Previously presented) The instrument of claim 43, wherein the “S” shaped portion includes a convex portion and a concave portion, and the cutter includes a cutter bar adapted to cut the suture wire at a location between the convex and concave portions.

56. (Previously presented) The instrument of claim 43, wherein the cutter includes a cutting bar adapted to move axially to cut the suture wire.

57. (Previously presented) The instrument of claim 43, further comprising:
a continuous length of suture wire, and wherein the instrument is adapted to form a plurality of wire suture loops from the continuous length of suture wire.

58. (Previously presented) The instrument of claim 43, adapted for use in a minimally invasive surgical procedure.

59. (Previously presented) The instrument of claim 43, wherein the cutter forms part of the passageway.

60. (Previously presented) The instrument of claim 43, wherein the distal end of the shaft includes an angled end face.

61. (Previously presented) The instrument of claim 60, wherein the instrument is arranged to form a wire suture loop in tissue by positioning the angled end face adjacent the tissue and driving the suture wire through the passageway such that a free end of the suture wire penetrates the tissue and follows a loop-like trajectory.

62. (Previously presented) A method of forming a loop suture, comprising:
driving deformable suture wire through a passageway in a suturing instrument having a distal end;

bending the suture wire in the passageway to form a suture wire loop with suture wire that exits the distal end, the suture wire loop formed without requiring further contact of the instrument with the suture wire after the suture wire extends from the distal end of the suturing instrument; and

moving a cutter in the instrument to cut the suture wire to free the suture wire loop from the instrument.

63. Cancelled